

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application. Please cancel claim 1. Please add new claims 31-55, as follows:

Listing of Claims:

1-30. (Cancelled)

31. (New) A method of controlling an output voltage that is derived from a supply voltage, the value of the output voltage being a function of a reference voltage that is also derived from the supply voltage, the method comprising:

monitoring the magnitude of the reference voltage;

in the event the magnitude of the reference voltage exceeds a threshold voltage, adjusting a relationship between the reference voltage and the supply voltage in accordance with the magnitude of the reference voltage exceeding the threshold voltage; and

generating the output voltage as a function of the reference voltage having the adjusted relationship while the magnitude of the reference voltage exceeds the threshold voltage.

32. (New) The method of claim 31 wherein adjusting the relationship between the reference voltage and the supply voltage comprises increasing an impedance that establishes the relationship between the supply voltage and the reference voltage in proportion to the magnitude of the supply voltage.

33. (New) The method of claim 32 wherein increasing the impedance that establishes the relationship between the supply voltage and the reference voltage comprises:

generating a control signal from the reference voltage; and

in response to the control signal, providing an adjustment signal that is used to adjust a voltage controlled impedance device, the adjustment signal having a voltage magnitude related to the magnitude of the reference voltage.

34. (New) The method of claim 31 wherein monitoring the magnitude of the reference voltage comprises applying the reference voltage to a voltage sensing circuit having a voltage controlled impedance device configured to have an impedance based on the magnitude of the reference voltage.

35. (New) A method of controlling an output voltage that is derived from a supply voltage, the method comprising:

generating a reference voltage from the supply voltage having a first relationship with the supply voltage;

monitoring the value of the reference voltage;

adjusting the relationship of the reference voltage to the supply voltage from the first relationship to a second relationship in response to the reference voltage exceeding a threshold voltage; and

generating the output voltage as a function of the reference voltage.

36. (New) The method of claim 35 wherein adjusting the relationship of the reference voltage to the supply voltage comprises adjusting a coupling between the supply voltage and a reference node at which the reference voltage is provided to control the value of the reference voltage.

37. (New) The method of claim 36 wherein adjusting the coupling between the supply voltage and the reference node comprises adjusting a voltage-controlled device coupled between a source of the supply voltage and the reference node.

38. (New) The method of claim 37 wherein adjusting a voltage-controlled device comprises:

applying the reference voltage as a feedback signal;
generating a device control signal having a magnitude that is a function of the feedback signal while the reference voltage exceeds the threshold voltage; and
controlling the voltage-controlled device with the device control signal.

39. (New) A method of controlling a voltage generation circuit, the voltage generation circuit developing an output voltage from a supply voltage and the output voltage having a value that is a function of a reference voltage, the method comprising:

coupling the supply voltage to a reference node to develop the reference voltage on the reference node, with the amount of coupling determining the value of the reference voltage;

monitoring the value of the reference voltage on the reference node; and
adjusting the coupling of the supply voltage to the reference node responsive to the monitored value of the reference voltage to control the value of the reference voltage; and

generating the output voltage in accordance with the value of the reference voltage.

40. (New) The method of claim 39 wherein coupling the supply voltage to the reference node to develop the reference voltage comprises adjusting a current flowing through a voltage reference circuit to adjust the value of the reference voltage as a function of the current.

41. (New) The method of claim 39 wherein the coupling between the supply voltage and the reference node comprises adjusting a voltage-controlled device coupled between a source of the supply voltage and the reference node.

42. (New) A voltage generation circuit, including,

a voltage pump circuit including a reference node and a pump feedback node, the voltage pump circuit configured to develop on an output node an output voltage having a value that is a function of a reference voltage applied on the reference node and a feedback voltage on the feedback node;

a feedback circuit coupled between the output node and the pump feedback node of the voltage pump circuit, the feedback circuit configured to develop the pump feedback voltage in response to the output voltage;

a coupling circuit coupled to the reference node and being adapted to receive a supply voltage and a control signal, the coupling circuit having a variable switch having a first signal terminal coupled to the reference node, a second signal terminal coupled to the supply voltage, and a control terminal coupled to the control signal, the variable switch operable in response to the control signal to control the value of a current supplied from the supply voltage to control the value of the reference voltage; and

a voltage sensing circuit coupled to the reference node to receive the reference voltage and coupled to the coupling circuit, the voltage sensing circuit configured to develop the control signal responsive to the reference voltage.

43. (New) The voltage generation circuit of claim 42 wherein the voltage pump circuit comprises a voltage pump circuit configured to develop as the output voltage a pumped output voltage having a value greater than the supply voltage.

44. (New) The voltage generation circuit of claim 42 wherein the voltage sensing circuit comprises a voltage sensing circuit configured to decrease a value of the control signal when the reference voltage increases and increase a value of the control signal when the reference voltage decreases.

45. (New) The voltage generation circuit of claim 44 wherein the voltage sensing circuit comprises:

a first transistor having a first signal terminal coupled to the supply voltage and having a second signal terminal and a control terminal coupled to the reference node;

a level shifting circuit having a first terminal coupled to the second signal terminal of the first transistor and having a second signal terminal, the level shifting circuit configured to develop a voltage on the second terminal having a value that is a function of the voltage on the first terminal;

a first current source coupled between the second terminal of the level shifting circuit and a common reference voltage source;

a second transistor having a control terminal coupled to the second terminal of the level shifting circuit and having a first signal terminal coupled to the common reference voltage source and having a second signal terminal on which the voltage control signal is developed; and

a second current source coupled between the source of the supply voltage and the second signal terminal.

46. (New) The voltage generation circuit of claim 42 wherein the coupling circuit comprises a coupling circuit configured to increase the current responsive to a value of the control signal increasing and decrease the current responsive to the value of the control signal decreasing.

47. (New) The voltage generation circuit of claim 46 wherein the coupling circuit comprises:

a level shifting circuit having a first terminal coupled to a source of the supply voltage and having a second terminal coupled to the second signal terminal of the variable switch, the level shifting circuit configured to develop a voltage on a second terminal having a value that is a function of the supply voltage; and

a current source coupled between the reference node and a common voltage reference source.

48. (New) The voltage generation circuit of claim 42 wherein the generator circuit further comprises:

a charge pump circuit that develops a pumped output voltage on an output responsive to a clock signal;

an oscillator circuit coupled to the charge pump, the oscillator configured to develop a clock signal in response to an applied control signal being active and not develop the control signal in response to the applied control signal being inactive;

a feedback circuit coupled to the output of charge pump circuit to receive the pumped output voltage, the feedback circuit configured to develop a pumped voltage having a value that is a function of the pumped output voltage; and

a comparator circuit coupled to the oscillator circuit and having a first input coupled to the feedback circuit to receive the pump feedback voltage and a second input coupled to receive the reference voltage, the comparator circuit configured to apply the active control signal to the oscillator circuit when the pump feedback voltage is less than the reference voltage and apply the inactive control signal to the oscillator when the pump feedback voltage is greater than the reference voltage.

49. (New) A voltage generation circuit, including,

a generator circuit adapted to receive a supply voltage and having a reference node, the generator circuit configured to develop an output voltage from the supply voltage and the output voltage having a value that is a function of a reference voltage applied on the reference node;

a coupling circuit coupled to the reference node and adapted to receive the supply voltage, the coupling circuit having a variable switch having a first signal terminal coupled to the reference node, a second signal terminal coupled to the supply voltage, and a control terminal, the variable switch being operable in response to a voltage control signal applied to the control terminal to vary an electronic coupling of the supply voltage to the reference node and thereby adjust the value of the reference voltage; and

a voltage sensing circuit coupled to the reference node to receive the reference voltage and coupled to the coupling circuit, the voltage sensing circuit configured to develop the voltage control signal responsive to the reference voltage.

50. (New) The voltage generation circuit of claim 49 wherein the generator circuit comprises a generator circuit configured to develop as the output voltage a pumped output voltage having a value greater than the supply voltage.

51. (New) The voltage generation circuit of claim 49 wherein the voltage sensing circuit comprises a voltage sensing circuit configured to decrease a value of the voltage control signal when the reference voltage increases and increase a value of the voltage control signal when the reference voltage decreases.

52. (New) The voltage generation circuit of claim 51 wherein the voltage sensing circuit comprises:

a first transistor having a first signal terminal coupled to source of the supply voltage and having a second signal terminal and a control terminal coupled to the reference node;

a level shifting circuit having a first terminal coupled to the second signal terminal of the first transistor and having a second signal terminal, the level shifting circuit configured to develop a voltage on the second terminal having a value that is a function of the voltage on the first terminal;

a first current source coupled between the second terminal of the level shifting circuit and a common reference voltage source;

a second transistor having a control terminal coupled to the second terminal of the level shifting circuit and having a first signal terminal coupled to the common reference voltage source and having a second signal terminal on which the voltage control signal is developed; and

a second current source coupled between the source of the supply voltage and the second signal terminal.

53. (New) The voltage generation circuit of claim 49 wherein the coupling circuit comprises a coupling circuit configured to reduce the electronic coupling of the supply voltage to the reference node responsive to a value of the voltage control signal increasing and increase the electronic coupling of the supply voltage to the reference node responsive to the value of the voltage control signal decreasing.

54. (New) The voltage generation circuit of claim 53 wherein the coupling circuit comprises:

a level shifting circuit having a first terminal coupled to a source of the supply voltage and having a second terminal coupled to the second signal terminal of the variable switch, the level shifting circuit configured to develop a voltage on a second terminal having a value that is a function of the supply voltage; and

a current source coupled between the reference node and a common voltage reference source.

55. (New) The voltage generation circuit of claim 49 wherein the generator circuit further comprises:

a charge pump circuit that develops a pumped output voltage on an output responsive to a clock signal;

an oscillator circuit coupled to the charge pump, the oscillator configured to develop a clock signal in response to an applied control signal being active and not develop the control signal in response to the applied control signal being inactive;

a feedback circuit coupled to the output of charge pump circuit to receive the pumped output voltage, the feedback circuit configured to develop a pumped voltage having a value that is a function of the pumped output voltage; and

a comparator circuit coupled to the oscillator circuit and having a first input coupled to the feedback circuit to receive the pumped voltage and a second input adapted to receive the reference voltage, the comparator circuit configured to apply the active control signal to the oscillator circuit when the pumped voltage is less than the reference voltage and apply the inactive control signal to the oscillator when the pumped voltage is greater than the reference voltage.